In the Claims:

Please amend the claims as follows:

Claims 1-18 are Cancelled.

19. (New) Apparatus comprising:

an interferometery system including an interferometer configured to direct at least one beam to contact a mirror and measure a relative position of the mirror as it moves with respect to the interferometer, the one beam having a diameter *d*,

wherein the interferometry system stores information about a topography of the mirror along a region where the beam contacts the mirror and uses the topography information to correct the position measurement, and

wherein the topography information has a spatial resolution on the order of the beam diameter *d*.

20. (New) The apparatus of claim 19, wherein the interferometry system corrects the position measurement by using the topography information to compensate for errors in optical path length and in beam directions related to deformations in the mirror.

21. (New) The apparatus of claim 19, wherein the interferometer is a dynamic interferometer.

22. (New) The apparatus of claim 19, further comprising a movable stage, wherein the mirror is mechanically coupled to one side of the stage.

23. (New) The apparatus of claim 22, wherein the interferometry system further includes a second interferometer configured to direct at least one beam to a second mirror coupled to another side of the stage.

24. (New) The apparatus of claim 19, further comprising a movable stage, wherein the interferometer is mechanically coupled to the stage.

25. (New) The apparatus of claim 24, wherein the interferometry system further includes a second interferometer mechanically coupled to the stage, and wherein the second interferometer is configured to direct at least one beam to a second mirror having an orientation different from that of the first mirror.

26. (New) A method comprising:

directing a beam to reflect from a mirror at each of a plurality of positions along a datum line on the mirror;

for each position, interferometrically measuring a direction of the reflected beam;

for each position, independently determining an orientation of the mirror relative to a source for the beam; and

calculating a topography for the mirror along the datum line based on the direction of the reflected beam and the mirror orientation at each of the plurality of positions.

27. (New) The method of claim 26, further comprising:

mechanically coupling the mirror to a movable stage.

28. (New) The method of claim 27, wherein the mirror is mechanically coupled to the stage prior to directing the beam to reflect from the mirror.

29. (New) The method of claim 26, further comprising:

mechanically coupling the source for the beam to a movable stage.

30. (New) The method of claim 29, wherein the source for the beam is mechanically coupled to the stage prior to directing the beam to reflect from the mirror.

31. (New) The method of claim 26, wherein the source for the beam comprises a single-beam interferometer.

32. (New) The method of claim 31, wherein the single-beam interferometer is a dynamic interferometer.

33. (New) The method of claim 26, wherein independently determining the relative orientation of the mirror comprises interferometrically determining the relative orientation of the mirror.

34. (New) The method of claim 33, wherein the mirror is attached to one side of an object, and interferometrically determining the relative orientation of the mirror comprises using an interferometer to direct at least one other beam to contact a second mirror attached to another side of the object.

35. (New) The method of claim 34, wherein the at least one other beam contacts the second mirror at substantially the same location as the first-mentioned beam reflects from each of the plurality of positions along the datum line on the first-mentioned mirror.